8

SCALES, FEATHERS AND FUR

Vertebrate Zoology

In Europe in the 19th century the study of natural history became very popular. Much of the popularity resulted from the persuasiveness of the doctrine of natural theology[1,2]. By contemplating nature one contemplated God through the tangible products of His Works. Here, it was thought, was a noble amalgamation of science and theology.

One of the important endeavours of the study of natural history was to discover new species. In this search for novelties, collections of preserved animals were in demand. In Victorian society it was also fashionable to have some of God's Works on show in the household. Stuffed animals and ones preserved in spirit were highly prized. In response to the demand for specimens collectors travelled to all parts of the globe—often under the patronage of the wealthy. There were also entrepreneurs who set up shop as natural history dealers in the major cities of the colonial powers. These shops were clearing houses for large numbers of collections[3].

In the early part of the century nearly all collections made in Australia were sent, or taken, back to England or mainland Europe. By the 1860s most of the obvious species of vertebrates had been discovered and named by naturalists overseas. Later, with the growing independence of the colonies, the colonists themselves began to study their own animals. Collections were being amassed by people who had little desire to see them leave the colony. However, study of these colonial collections was impeded by the very fact that the named specimens were overseas. Without access to these named specimens, the local naturalists were often not in a position to know if their animals were new or not. In the young Queensland colony, study was also dogged by the lack of relevant literature. Without the published findings of European naturalists, those working in the colonies operated very much in the dark[4,5].

These were the circumstances when the Queensland Philosophical Society began gathering specimens together for a museum in 1862. This was the atmosphere in which research on mammals, birds, reptiles, amphibians and fishes began in Queensland.

A Pioneer Museum and its Ornithologists 1862–1882

In most museums of the mid-19th century specimens were either exhibited in jars of spirit-of-wine, or as skins laid more or less flat, or skins were mounted in life-like positions, or they were dried if they kept their body form. Of course, the mounted specimen was favoured for exhibition. Collections were for display. A specimen that could not be seen in a gallery by a visitor was a useless specimen. The concept of separate storage for scientific specimens is very much a modern one[1]. This approach did have one advantage—properly built display cabinets were air-tight and excluded dust and insects. Since the only other form of storage was boxes and chests that gave little protection those specimens on display tended to be better preserved than those that were stored.

A consequence of the policy of displaying all specimens was the redundancy of duplicates. Museums had space only for one example of each species, or, at most, one of each sex if the sexes differed. The extras became duplicates and these were mostly used for exchanges. Thus, there was no museum policy to obtain all the material that passed by, nor indeed could the museum have afforded to purchase it all. It was only in the late 19th century when many specimens were needed for the study of geographic variation and the designation of subspecies that the importance of replicates was recognised[6].

Previous page: Marble Velvet Gecko *Oedura marmorata* Gray, 1842. A widespread species in the open forests of Queensland (drawing from *Forty Queensland Lizards*, a Queensland Museum Booklet, illustrated by staff artists S. Hiley and M. Oakden).

There was another consequence of mid-19th century museum display philosophy that had unfortunate implications for serious studies of the fauna. The labels on the specimens were designed to inform the viewer. They usually gave the name of the species and where it had been found, but there was no information on habitat, season, habits, predators, and colour and other characteristics that were destroyed by preservation.

The following example is typical of the labels of those days:

THE PUNISHMENT OF RAPACITY.

This remarkable example of the omnivorous appetite of the *Varanus varius*, or Lace Monitor, was found in the Kynuna District and donated by Mr W. Higgins. In endeavouring to swallow the well-protected *Tachyglossus aculeatus* — popularly known under the names "Native Porcupine", "Spiny Anteater", and "Echidna" - the Goanna or Monitor attempted too much and both succumbed in the struggle.

The exhibit is shown as found.

A decorative piece from a Victorian drawing room. It was owned by the late J.M. Bauman of Bauman's Gun Shop, Elizabeth St., Brisbane and was donated to the museum by his daughter, Mrs Betty Harris, of Newmarket, Brisbane.

Queensland Museum.

Brisbane June 4th 1880

I hereby engage in consideration of the payment of my passage money to and from Dungeness & and of the payment of the Sum of £12 per month, wages, to give up to the Trustees of the Queensland Museum, all the specimens, whether of botany, natural history or ethnology that I may collect during the period of my present engagement with the Museum.

Kendall Broadbent.

William A. Haswell, Witness

Kendall Broadbent's first contract with the Queensland Museum.

Perhaps as a result of the emphasis on display the necessity for keeping other data was often overlooked. In the inventory prepared for the museum board in 1876 the only particulars listed were the species' names and how many of each were held. The collections of the infant Queensland Museum being set up by the Philosophical Society suffered from all the consequences of the contemporary museum display philosophy and accordingly their long term scientific value was impaired. In the young Queensland Museum the scientifically inclined had to stand toe-to-toe with members of the public to view the collections. Until the collections started to overrun the display facilities every effort was made to exhibit all the museum's specimens.

However, even in the mid-19th century, the men associated with the foundation of the museum recognized the scientific significance of the specimens they were collecting and much of the material was the basis for contemporary investigations rather than being used merely for displays of curious objects. Outstanding amongst these men were Charles Coxen and Silvester Diggles—both first and foremost ornithologists.

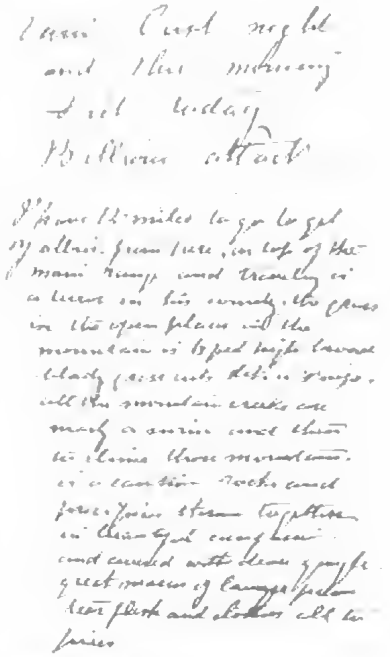
Coxen, to whom we owe the foundation of the museum and the government's eventual commitment to it, had come to Australia in 1833 to collect bird specimens for the London Zoological Society, of which his brother-in-law John Gould was the secretary[7]. Although Coxen later settled in Queensland much of his material was still sent back to Gould or

to the Australian Museum in Sydney. He was also an intermediary for the purchase of collections for John Gould. For example, the collection of birds made by John Jardine at Somerset passed through his hands[7,8]. Gould had close ties both with Coxen and his brother Stephen (see Appendix 1). Thus, although he made only one visit to Australia and did most of his work in England his publications did find their way to Queensland, and Gould's *Birds of Australia* was one of the first accessions to the museum library. It was purchased from Coxen's widow in 1876. Coxen himself was a skilled taxidermist and helped lay out birds in the display cabinets for the Philosophical Society's museum[9,10]. It was thus, to some extent at least, through Coxen that a tradition of ornithological studies and some skill in bird taxidermy existed in Queensland from an early date. However, unlike Diggles, his influence was largely indirect and he did not contribute very much to the body of indigenous scientific literature himself.

Silvester Diggles, like Coxen, was a founding member of the Philosophical Society. He was to become an important figure in Australian ornithology and he made a significant contribution to indigenous studies on birds. He was born in Liverpool, England, in 1817, and sailed for Australia with his family in 1853. In 1854 he settled in Brisbane where he taught art and music, repaired musical instruments and hired out pianos[7]. As well as being a member of the Philosophical Society, he helped found the Brisbane Choral Society and the Brisbane Philharmonic Society[11]. Diggles was interested in insects as well as birds and often gave papers and exhibited specimens at Philosophical Society meetings. He donated many specimens to the Philosophical Society's museum and was one of its two curators from 1869 to 1877[9]. However, by 1873 most of the Society's collections had been handed over to the government and it seems probable that Diggles may have helped Coxen, the honorary curator and the new custodian, Karl Staiger (see Chapter 3).

Diggles' major work was the *Ornithology of Australia*—an encyclopaedia of Australian birds[12]. Diggles himself published two-thirds of this work in 21 parts, which were issued to subscribers. Then he ran out of money[8]. His fellow musicians held a benefit raising £116 which enabled him to reissue the first 21 parts in two volumes as a *Companion to Gould's Handbook*. However, he was not able to publish the last third of his book[7]. The *Ornithology* was not successful financially and as a result he ran into difficulties. Thus, although he had intended to donate his private collections to the Queensland Museum he was not able to do so. The museum bought his original lithographs and part of his bird collection from the taxidermist Eli Waller[13].

The first vertebrate to be described as a new species from the museum's collections had been purchased for the museum by Coxen[14], apparently from Eli Waller, who had a taxidermy shop in Edward Street, Brisbane[7]. It was a parrot—*Aprosmictus insignissimus*. John Gould in 1875 announced the new bird to the world[15]. Gould had first seen a painting of it and excitedly asked for the specimen; and '.....through the kindness of the authorities of the new Zoological Museum at Brisbane, I have received the actual specimen.....'[16]. The specimen was collected north of Dalby in 1874. Gould was impressed with this 'splendid parrot' and illustrated it in his *Birds of New Guinea*. Unfortunately, in later years it was discovered that the bird was not a species. The specimen was a hybrid of the King Parrot and the Red-winged Parrot. The specimen was returned to the museum and, as late as 1922 it could be seen on display[8]. Later it disappeared—probably destroyed in the clean up of 1946 (see Chapter 4).



A page from Broadbent's diary: 'travelling is a terror in this country.... rocks and precipices thrown together in beautiful confusion'.

The Golden Bowerbird, *Prionodura newtoniana*, is regarded as one of the most beautiful of birds.

A year later Diggles discovered two new birds amongst a collection of birds from Normanton. They had been sent to the museum by Tom Gulliver[17]. Gulliver worked for the Telegraph Department and was employed on the erection of the telegraph line to Cape York[7]. Gulliver's collection was never displayed. In the 1876 inventory there is a note that the 50 specimens were at Coxen's residence and they were probably amongst the material returned after his death. Diggles' two new birds, however, were not new. They had been discovered and named elsewhere. This was not to be the last time this happened to Diggles. Of the 14 new birds he described in his lifetime none was really new. He realised that this would always be a possibility without comparative material and the relevant literature[4]. However, that was not the reason on one occasion for he was the victim of a fraud. In 1873 and 1874 he presented papers to the Philosophical Society, bringing to its notice six new species of birds[4,18]—a notable achievement by any standard. They had been collected by one John T. Cockerell, a master mariner, and Diggles believed them to be from Cape York. These birds—a kite, a rail, two bitterns, and two kingfishers—were indeed new to Australia but they were not new to science. They were actually well known species from the Aru Islands in what is now Indonesia. The fraud was not discovered until after Diggles' death[3,7].

Cockerell did not donate his supposedly Cape York specimens to the Philosophical Society. He sent his bird skins to the natural history dealer Dr Edmund Higgins to be sold in London[7]. The 1394 birds were purchased by Frederick Godman who presented them to the British Museum in 1881. Godman had bought the collection because it supposedly contained the six new species that Diggles had described. However, Diggles had not contributed to science. He had contributed to making Cockerell's collection worth money—for Cockerell. In the paper of 1874, Diggles gave some extraordinary information about the habitats of the Albert Lyrebird, but this was also based on erroneous data given to him by Cockerell.

After its formation in 1876 the first museum board of trustees instigated a policy of purchase and exchange of collections. Because the board's policy determined that the representation of species should be complete, most of the collections obtained by exchange were from foreign countries. Donations accounted for the bulk of the early local material, although some was purchased. Eventually the rate of accession of material outstripped facilities for display.

> The limited space afforded by the present temporary building being altogether inadequate for the exhibition of the collections already in the hands of the Trustees, they have been compelled to pack up and store a large portion of these specimens which would not suffer material injury thereby; but notwithstanding this, the Museum is inconveniently crowded with exhibits, especially in the department of Natural History, the perishable nature of the specimens necessitating constant care and inspection: while from the same cause, it has been necessary to restrict additions to such of the rarer objects as might not be easily obtainable at a future date, when there may be more available space for exhibition[19].

Even with a new building and a taxidermist the trustees would not be able to display every specimen in the collections. Specimens had to be tucked away in alternative storage. Many would rarely see the light of day until a century later.

In 1880 the local press carried accusations that a considerable number of specimens had gone astray at the museum[20]. These accusations were accredited to the same J.T. Cockerell who had misrepresented his Aru

Island collection of birds to Diggles[7]. Apparently the trustees had hired Cockerell to arrange birds in the new building—in the minutes of the board meeting of 19 February 1880 it is noted that Cockerell had been paid £10.6.0 for his work. Haswell, the curator, dismissed the charges as untrue[21]. In retrospect we can see that Haswell was wrong—at least in regard to the bird specimens. Between 1876 when the first inventory was completed, and sometime in the 1880s when de Vis compiled the card index of holdings of birds, a considerable number of birds disappeared. One of the specimens that vanished was a Night Parrot. This bird has always been extremely rare—only a handful of specimens were ever collected. Thus they are easy to trace. In the British Museum (Natural History), acquired in the infamous collection purchased by Frederick Godman, there is a specimen collected by J.T. Cockerell supposedly from Western Australia. It has been suggested that the information for the specimen was probably incorrect and that Cockerell possibly purchased or exchanged it from Frederick Andrews in South Australia[22]. There is an alternative explanation—this could be the missing specimen from the Queensland Museum. There are many coincidences between species and numbers of specimens that are missing from the museum and those that were in the collection of Cockerell purchased by Godman. Cockerell appears to have been covering his tracks by spreading rumours of losses from the museum collections during its move.

The Collectors and de Vis 1882-1911

In 1882 Charles de Vis was appointed curator. He was an experienced museum worker having held the position of curator of Queen's Park Museum, Manchester. Since coming to Australia he had contributed natural history notes to the *Queenslander* under the pseudonym of 'Thickthorn'[8]. de Vis' training, however, had been for the Anglican Church. In his early days, he was the typical clergyman-natural historian and very much a part of the natural theological movement:

> If the love and discrimination of the beautiful be humanising – if ever wise Government seek to elevate the mental horizon of the governed by bringing the eye into contact with the conceptions of the painter and sculptor—surely the pencil and chisel of nature working in their happiest moods must stir within the most grovelling mind its latent admiration of the ideal, and wean it from those grosser sensualities which are ultimately pernicious, if not fatal, to society[23].

Later he was a supporter of the theory of evolution[24].

de Vis was a prodigious worker and was at the museum for about nine hours a day every day of the week[8]. From 1882 to 1911 he wrote 136 scientific papers and contributed about 120 articles to newspapers. He described 371 new species of extant vertebrates. These were 173 species of fish, seven species of frogs, 70 species of reptiles, 107 species of birds, and 14 species of mammals. With his death in 1915 he left behind several unpublished papers and books. Not all de Vis' new species were so, but about two-thirds are presently regarded as valid.

de Vis worked on collections and specimens that came into the museum—he did not collect himself. In this he was a closet naturalist and not a field worker[1]. The field work was done by others. Of the many collectors of zoological material Kendall Broadbent and Sir William MacGregor were of particular importance to the museum during de Vis' time.

In 1882 Broadbent was appointed zoological collector for the museum. During his employment he collected vertebrates at Cardwell and Tully

de Vis found this new species, the spectacular Spiny Skink, *Tropidophorus queenslandiae*, amongst a collection from Bellenden Ker. It lives in the moist, dark litter of the rainforest.

(1882), Charleville (1883), Cape York, Murray Island, and the Gulf of Carpentaria (1883–4), Rockhampton and Cardwell (1888), and Bellenden Ker Range and Herberton (1889). de Vis described many new species from the specimens Broadbent collected—the most notable was the Golden Bowerbird *Prionodura newtoniana*. The specimen was collected at the Tully River Scrubs in 1882[25]. In his description de Vis apologised for the

Broadbent to de Vis: 'I have the honour to report.....Mr. E.P. Ramsays collectors are in the district so I am informed.....'.

2 76 Herberton May 23d 1884.

Mr C W De Vis.
Curator Queensland Museum.
Sir

I have the honour to report. 8 days fine weather since my last report. But when fine weather comes, these scrubs will turn out good. There is a fine scrub 12 Miles up by Herberton called Eveline, I shall try that next. The collection this month, is three yellow P Newtoniana, a new Sericornis, and a new mountain thrush. he is spotted like (Orocincla lunulata) but twice the size with a large bill. and a different call altogether. Will send you another small box next week weather permitting. Sent Box of Spec on the 10th through Coll & Co And Coles receipt. and Telegram

plainness of the species but he did not realise that the specimen was a female or an immature. This specimen was stolen from a show case in 1888[26]. In 1889 he received a beautiful golden male from Bellenden Ker collected by Archibald Meston. de Vis thought it was a new species and did not at first connect the specimen with the bowerbird he had described earlier. It was announced in the newspaper[27] that a brilliant golden bowerbird, new to science, was to be described as *Corymbicola mestoni*. Before de Vis could formally publish the description Broadbent informed de Vis that the bird was just a male of *Prionodura newtoniana*.

As a result of the economic depression of the 1890s the museum could not afford the luxury of a zoological collector after 1893 and the supply of

The ageing and much-loved Kendall Broadbent.

with list of Specimens, hope
you received it in good dry order.
This country is the highest in
the Herberton district. must be
nearly 5000 feet, we are here
1500 feet, higher than Herberton.
The Wild river heads here.
Received the money thanks you

I have the honour to
remain Your
Obedient Servant
Kendall Broadbent.

Mr C P Ramsays Collectors
are in the district we I am
informed. Birds I think are
new. I must send you
quick to name

Broadbent discovered the Golden Bower-bird, *Prionodura newtoniana*, in the Tully River rainforest and, at a later date, he collected more near Herberton and at Bellenden Ker. He sent this drawing of two of the bowers to de Vis, who described the species—although the type cannot be traced in the study skin collection.

Broadbent's writing was on this photograph of a display that Spalding probably mounted. It was exhibited until replaced with the new dioramas in the 1970s.

specimens ceased. William MacGregor the administrator, and later lieutenant-governor, of British New Guinea ensured a supply of foreign vertebrate specimens for de Vis to study. de Vis discovered many novelties amongst the more than 3000 specimens—mostly birds—that MacGregor collected during his stay in New Guinea. The collection was technically the property of the British New Guinea government, later the Papuan New Guinea government, and, like the anthropological collection that MacGregor made, the major part of the it was held in trust for the Papua New Guinea Government (see Chapter 10). It received little attention for nearly 80 years after de Vis' work, for after 1893 the museum suffered from shortages of staff and funds that were not redressed until the early 1960s.

One of the effects of the depression on the museum was to inhibit its ability to exhibit every specimen in its collection. There just were not the taxidermists to keep pace with the inflow of specimens; nor was there the floor space to exhibit them. Those that could not be displayed were stored away, often crammed into the little space available for alternative storage. The museum was, in fact, building up a research collection by default. The concept of research collections separate from display material was then coming into vogue in Europe. It was a reversal of the policy of trying to exhibit every object in the collection[1]. This change in philosophy may have resulted, at least in part, from the recognition of the importance of intraspecific variations in natural selection, following the publication of Darwin's *Origin of Species* in 1859. This was the subject that now excited naturalists, and instead of a single specimen now representing a species, they needed a whole range of specimens—the more the better—for their investigations. The hypothesis of natural selection had a profound effect not only on the course of natural science but also on the value of museum collections that had been made up to that time. With the recognition of the fact of intraspecific variation there arose the necessity to identify the actual specimens used to describe the species. These specimens became known as the type specimen or specimens—the name bearers of species. They are the standard for the species against which other specimens can be assessed. They remove the uncertainties that arise through ambiguity or inadequacy in descriptions; and they serve as the point of reference from which old descriptions can be updated, by applying new techniques of investigation and new perspectives to the type. Type specimens are now—and had become by the beginning of the 20th century—the most precious part of a museum's holdings—for they are unique and irreplaceable.

A Bird of Paradise, *Paradisea raggiana*, collected by Sir William MacGregor in Papua New Guinea in 1894.

Unfortunately in the Queensland Museum, the habit of displaying every specimen and dispensing with duplicates resulted in collections of unique specimens, many of which were, indeed, types specimens of the many species that de Vis described. However, the original label was often lost and the data about each specimen were often lean, and sometimes entirely lacking. It is fortunate from this point of view that MacGregor steadfastly refused permission for the museum to exchange duplicates of his collection. de Vis adhered faithfully to MacGregor's conditions and thus the museum has one of the largest and most comprehensive collections in the world from Papua New Guinea. The board minutes for 4 May 1894 record that the British Museum requested some of the duplicates from New Guinea. It was refused of course, de Vis tartly commenting that for some years the museum had hoped for a share of the British Museum's annual distribution of duplicates too—apparently it had hoped in vain. Subsequently only two specimens from the MacGregor

collection were presented to the British Museum by the Queensland Museum[3].

The Long Middle Years 1911-1946

de Vis, some time in the 1880s, had started a card catalogue for birds. His system, however, was unwieldly. It was open-ended, for each specimen received a unique label under the name of the species with a letter of the alphabet. The difficulties become apparent if the name of the species is changed, or if some specimen is found to be misidentified. In 1911 the new director, Ronald Hamlyn-Harris, instigated a modern system of data storage and retrieval for research collections. Each specimen was, from that time, to receive a unique number as a label. All the information known about the specimen was entered in a register under that number. The task of registering the backlog of unnumbered museum specimens, however, was beyond the means of Hamlyn-Harris' small staff. In the vertebrates, most of this registration was not done until the 1970s and 1980s.

Between 1911 and 1946 not many specimens were added to the museum's collections and there was little research conducted on vertebrates. The exceptions were some papers on reptiles by Heber Longman, and more importantly, the work on fish by James Ogilby. Ogilby was hired for a short period by the museum in 1901, but was dismissed for his 'extreme and undiscriminating affinity for alcohol'[28]. From 1905 to 1912, he was honorary curator for the Amateur Fishermen's Association of Queensland. In 1912 he was re-employed by the museum, and in 1913 the Amateur Fishermen's Association handed over all their type material of vertebrates to the museum. While in the museum between 1912 and 1920 Ogilby published 22 papers and described several new species of fish. He died in 1925[29].

The type specimen of a new genus and species of turtle, *Devisia mythodes*, that Ogilby named in honour of Charles de Vis in 1907[30], illustrates the problems with labelling of some of the specimens in the museum. The type specimen appeared to have been collected by Sir William MacGregor in New Guinea. In 1947, the specimen was examined and found to be a specimen of *Chelydra serpentina*, the American Snapping Turtle[31]. This species does not occur in New Guinea. Someone slipped up somewhere.

The Taipan, *Oxyuranus scutellatus* (Peters 1867), is Australia's largest venomous snake and undoubtedly its most dangerous species. It occurs in northern Western Australia and the Northern Territory, on Cape York Peninsula, and in coastal Queensland—east of the main range.

During the 1920s and 1930s scientific work was at a low ebb, not only in Queensland but also in the rest of Australia. In Queensland Director Longman tried to compensate for this by helping individuals and institutions from other countries to pursue investigations in the state (see Chapter 3). However, in other parts of Australia some serious opposition to the continuing depredations being made on the Australian fauna by foreign institutions had developed. It was not only the old anxiety connected with the removal of type specimens that prompted this opposition, it was also a concern that local scientists, without resources to collect widely, could not compete with their overseas counterparts. Ellis Troughton, ebullient curator of mammals in the Australian Museum was in the vanguard of this opposition[32]. He was especially sensitive about the large collections of mammals being shipped to New York by Richard Archbold, the wealthy benefactor who financed and led a whole series of collecting expeditions to Papua New Guinea and northern Queensland through the 1930s and 1940s for the American Museum of Natural History[33]. According to Troughton, the material collected was being used by the American museum's mammalogist, G.H. Tate, to settle 'our mammal question'[34]. Troughton was opposed to 'any idea that Archbold's and others' olvaginous dollars be given full play in New Guinea or on the mainland'[34] and he claimed to have initiated, with his institution's support, the action—

> which led to the gazettal of restrictions on all foreign collectors in the (Australian) Territories—and had written to the Minister for Customs asking that the regulation re return of types and examples of rarities to the appropriate State or Commonwealth Museum be included in (collecting) permits[34].

Acrobates pygmaeus, from Deception Bay, on a *Grevillia banksii*.

At about this time a young German zoologist, Dr Gabriele Neuhäuser, arrived in Australia. Being Jewish, she could not work in Germany and for two years had been in Asia Minor earning her living as a collector of rodents and other small mammals. She brought with her a letter of introduction from Gregory Mathews in England[7,35], and she had made contact with Tate, who wrote to Troughton asking him to help her to obtain permits to collect in Australia for Archbold[34]. Troughton made his own personal—and chauvinistic—view very clear to Longman:

> one naturally found it difficult to be too discouraging to a woman's plans, but I certainly had no intention of furthering Tate's egotistical scheme[34].

However, although Troughton believed that the federal government would impose restrictions in permits issued for collecting in the Northern Territory, he could not be so sure about what would happen in Queensland:

> as Dr Neuhäuser will be disposing of the collections of mammals to Archbold, it may be necessary for the State authorities to make some provision which will be binding on the institutions eventually receiving the collections, and I do hope you will be able to devise something in Queensland where she first proposes to collect[34].

Troughton went on to suggest that she be permitted to take up to 12 pairs of each mammalian species—10 pairs for Archbold and a pair for the Queensland Museum. He may have been hoping that the twelfth pair would be given to the Australian Museum but appears to have thought it indelicate to actually suggest this.

Longman provided all the assistance to Neuhäuser that Troughton had denied her. The permit that he obtained for her imposed restrictions

The museum truck aboard MV *Goori* going to Fraser Island in the 1960s.

on numbers of specimens only in respect of protected species—koalas, platypus and tree kangaroos[36]. It did not include any provision for representative specimens to be retained by the museum, nor indeed had Longman recommended that it should—for he was not expecting Neuhäuser to perform as an honorary collector for the museum. He did arrange to purchase specimens from her, and others were exchanged for various services such as repacking specimens and making crates to despatch her collections overseas[37]. Longman was concerned about the implications of type material being removed from Australia. To that extent, at least, he agreed with Troughton. However, his recommendation that some provision requiring return of types be included in the permit was ignored[38], so he wrote to Tate at the American Museum of Natural History:

> You will be interested to hear that Dr Gabriele Neuhäuser has left for western Queensland en route for northern Queensland. I was able to help her with permits etc., on the definite understanding that paratypical specimens of any new species of mammals sent abroad would be returned to the Queensland Museum. Doubtless you will honour this undertaking fully in the circumstances[39].

Tate replied that the suggestion was 'eminently reasonable'[40].

Thus, all was settled amicably—although Troughton probably was not satisfied and may have felt that Longman was being altogether too cooperative. Longman wrote, gently chiding him:

> You will be interested to hear that Dr Gabriele Neuhäuser left last Thursday with Mr J. Edgar Young, one of our honorary collectors. As she is unfamiliar with local conditions this arrangement is advisable. We hope to secure a representative series of specimens from her collecting, but I am not sure whether Mr Young will accompany her for more than a few months..... In any case, paratypical specimens are to be returned to the Queensland Museum, should she obtain new mammals.
>
> Whilst I am naturally anxious to see all possible work on our fauna carried out by local institutions and specialists, I do not see that we are justified in attempting to make Australia a strictly reserved area in which overseas collectors should be deterred from working.
>
> As a matter of fact we have received many specimens from the British Museum from the series collected by Wilkins and by Sherrin, and we also had some of Raven's specimens.
>
> And when I write to my friend Troughton in the Australian Museum, I cannot get a single specimen of *Rattus culmorum* although I advised, in the first place, that the material should be sent to him, as a specialist!
>
> I hope that you will be able to arrange for a series of exchanges with Tate. Unfortunately we have so little to offer that we cannot expect Papuan and Pacific species, but I do hope that you will obtain a representative series[41].

Despite all the assistance she was getting, Neuhäuser found it difficult. She was pleased and relieved, when Professor Neumann at the Museum für Naturkunde, in Berlin, wanted her to send birds —

> because the mammals here could not cover my expenses[42].

Even so, it was a blow to her when, early in 1938, the government imposed a royalty on restricted species—from five shillings per possum skin up to 10 shillings for a kookaburra[43].

Both Neuhäuser and the museums she was supplying benefited from Longman's assistance in the packing and despatching of her specimens, and her correspondence with Longman probably helped to dispel some of

The museum acquired its first vehicle—a 14 h.p. Commer truck—in 1950. It was used principally for field work. It is photographed here in 1954 at a campsite near Chinchilla, on the Condamine River.

By the 1960s the museum's collecting expeditions were ranging widely through the state. *Left*: the museum truck near Johansens Caves, 16 miles N of Rockhampton; *lower left*: at the Annan River, 20 miles south of Cooktown.

the sense of isolation she must have experienced. For the Queensland Museum it was almost as if it had a collector in the field again.

Longman to Neuhäuser:

> I think that the *Pseudochirus* obtained by you at Mt. Spurgeon is probably the original *P. peregrinus* Boddaert, collected by Banks. We had another skin received last year. This is a most interesting discovery.....I am hoping that you will be able to get two or three specimens of *Dendrolagus bennettianus* for us[44].

Neuhäuser replied—

> I sent you from Spurgeon one specimen of each, *P. peregrinus*, and *P. laniginosus. P. laniginosus* is smaller, has much longer ears, and lives in the open forest, togethr with *Trichosurus. (P.) peregrinus* lives in the thick scrub.....I got one specimen of *P. laniginosus* from here (Coen), much darker and not so much white on the tail, while the Spurgeon specimens did not vary at all. There seems to be some confusion about the two species, as *P. laniginosus* is only mentioned in the books for south Queensland, and the *P. peregrinus* description could as well mean the 1 from here.....I do not know, if I ever have a chance, of getting *Dendrolagus bennettianus*. The tree-kangaroos did certainly not fly from New Guinea to the Daintree River, so it is quite likely, that they are in Cape York[45].

Longman to Neuhäuser:

> I hope that you have got additional specimens of the *Ps. laniginosus* and *peregrinus* type. A copy of our Royal Society Abstract for the last meeting is enclosed, and you will see that I exhibited these specimens.....We are still hoping for specimens of *Den. bennettianus*, and it would be splendid to get some from further north than the Bloomfield[46].

Neuhäuser replied—

> Did you know, that there are 2 different kinds of Cuscus in Cape York? the one I sent you, with naked inside of ears is not *maculatus*, which is the more common form here. What is the Latin name for both kinds? I think, the *Pseudomys* must be quite interesting too, and I would like to know her name, if you can tell me[47].

Ivor Filmer (*left*), general assistant in the museum, helps McAnna unpack a consignment of skins sent by Vernon from Cape York in 1948.

Toward the end of 1938 Gabriele Neuhäuser's brave and lonely travels in northern Queensland came to an end when she married, becoming Gabriele Scott. She now lives in Queensland and is an honorary associate of the museum.

Gabriele Neuhäuser collected hundreds of birds for the Museum für Naturkunde, and mammals for the American Museum of Natural History, and the Queensland Museum got a share of all she collected. Her specimens were the only significant additions to the museum's vertebrate collections between 1893 and 1946. From the specimens of birds she collected, Gregory Mathews and Professor Neumann described new forms and new subspecies[7,49-9].

A new bird is a very rare event. The Eungella Honeyeater was discovered in the montane rainforest near Mackay and described by Longmore and Boles in 1983.

The Modern Era 1946-1985

When George Mack became director in 1946 the institution had been through more than half a century of neglect. There had been one short period of three or four years between 1911 and 1915 when there had been a reasonable staff complement. However, for most of the 53 years from 1893 there had been a director and usually two preparators or collectors but there had never been a professional scientific staff member responsible for vertebrates (see Chapter 3). It was not very surprising, then, that many old mounts from the last century were in bad condition from insect attack, were covered in layers of dust and had to be destroyed (see Chapter 4). Although there was no information attached to them, many were irreplaceable type specimens of birds and mammals. While it may have been possible to identify some of the types by idiosyncratic features and measurements given in the original description, the specimens were damaged beyond any hope of retrieval. Mack instigated the policy of registering all display specimens so the unfortunate circumstance would not happen again.

Mack then set about the collection of material—both for display, and to build up the research collection and restore some of the information that had been lost. This was an unprecedented period of research and collection. In 1948 Mack sent the young taxidermist, Donald Vernon, to join the Archbold Expedition in Cape York[33]. During this four months Vernon added many valuable specimens and Mack reported on them[50]. From 1950 the size of the vertebrate collections increased several fold. Not since the time of Broadbent had the museum collected its own specimens on such a scale. The single contributing factor to the change was motor vehicles. In 1950 the museum obtained its first, a truck, and in the 1950s and 1960s the preparators travelled around the state attempting to fill in the gaps in the research collections (see Chapter 4). On one occasion, just before Christmas 1947, the collecting was done closer to home. Vernon, assisted by Filmer, went collecting from the museum roof. They got the museum's first specimens of the Spotted Dove *Streptopelia chinensis*. A couple of days later, Vernon 'potted' a starling and a sparrow through the workshop window[51].

The collections stored in spirit were overhauled from 1964 to 1966 when Woods had become director. These were stored in large ceramic urns and concrete tubs attached to the concrete floor. Many specimens were found to be dehydrated or macerated and were destroyed. Unfortunately, here too many types were lost, some inadvertently owing to loss of labels.

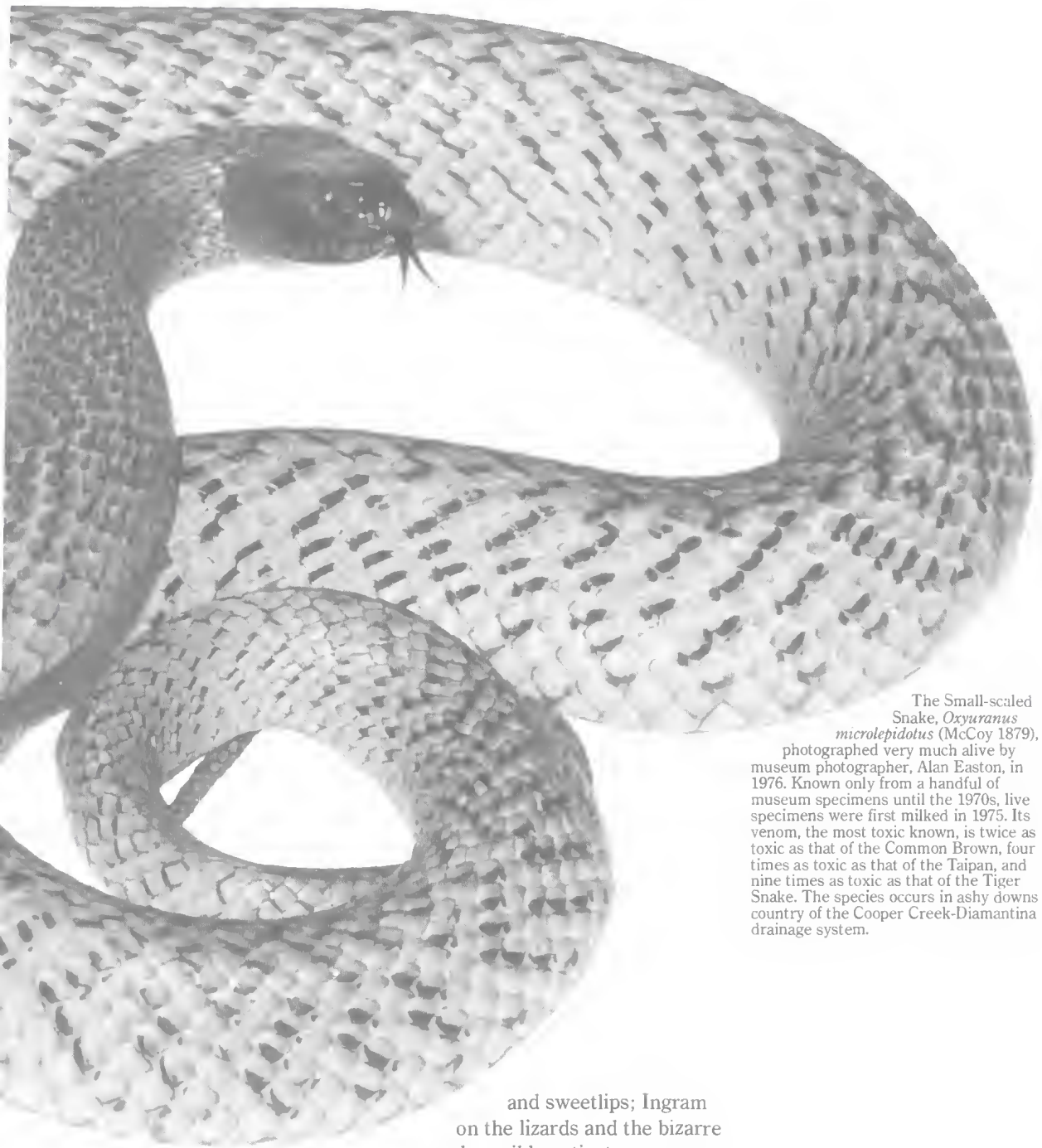
With the appointment in 1967 of the first curator in vertebrates, Jeanette Covacevich, many of the old problems of the unregistered backlog and unidentified types were solved. She began a concerted effort to

register all the reptiles
and amphibia and to research
and identify all the types of these groups. The results of her work on the types were published in 1972 and 1981[52-3]. In 1969 Sue Hoare was appointed curator of fishes and she also began to identify the types. After she left the museum in 1970 the work was continued by her successor, Roland McKay. The task was completed in 1973. Vernon became ornithologist in 1970 and he began the registration of the backlog of birds—and in 1984, with the help of volunteers and the new assistant in ornithology, Wayne Longmore, the task was completed by G. Ingram who also completed the work on the types of birds held by the museum.

By 1983 the registers for the vertebrate sections contained over 100,000 records. The size of the data base made it difficult to operate by hand. In that year the decision was made to computerize the records. With the aid of grants from the Australian Biological Resources Survey in Canberra, data entry began in 1984. By mid-1985 all the mammalian records and three-quarters of the reptilian and amphibian records had been entered.

Alan Easton, museum photographer 1965–84.

From 1970, museum curators and their assistants systematically surveyed and collected from rivers and from the waters of the continental shelf as well as from desert, heath and montane rainforest habitats throughout the state, and have contributed substantially to knowledge of the biology and distribution of the vertebrates. Among the significant work has been that of McKay on the commercially important whitings, grunters



The Small-scaled Snake, *Oxyuranus microlepidotus* (McCoy 1879), photographed very much alive by museum photographer, Alan Easton, in 1976. Known only from a handful of museum specimens until the 1970s, live specimens were first milked in 1975. Its venom, the most toxic known, is twice as toxic as that of the Common Brown, four times as toxic as that of the Taipan, and nine times as toxic as that of the Tiger Snake. The species occurs in ashy downs country of the Cooper Creek-Diamantina drainage system.

and sweetlips; Ingram on the lizards and the bizarre and possibly extinct gastric-brooding frog, *Rheobatrachus silus*; Czechura on the unusual skink *Nannoscincus graciloides*; Covacevich on the highly toxic Small-scaled Snake *Oxyuranus microlepidotus*; Ingram on the Plumed Frogmouth, *Podargus ocellatus*; Longmore on the new species, the Eungella Honeyeater; and Van Dyck and Archer on small carnivorous marsupials[54].

The majority of the larger and more conspicuous of the vertebrates of the state now have been described and their habitats recorded. For this reason, it is probable that, in the future, some of the museum resources and staff previously dedicated to studies of vertebrates will be diverted to

tackle those groups of organisms that are less known and more in need of documentation. Despite this, the vertebrate collections will continue to be an irreplaceable archive. With the application of new techniques for registration and preservation, new approaches to display and vastly improved storage facilities and retrieval systems, the use of the archive will be enhanced. Further, bird and mammal reference collections assume special importance in the 1980s, for it is becoming extremely difficult to augment them. Natural areas are diminishing and there are stringent regulations under fauna protection legislation that, for conservation reasons, preclude collecting. Nevertheless, with the upsurge of interest in the environment, interest in the vertebrates, which flourished in the late 19th century, has never been higher than it is today.

The Black Mountain Skink, *Carlia scirtelis*, is an inhabitant of the bare boulder mountains near Cooktown. It was described and named by Ingram and Covacevich in 1980.

Antechinus leo occurs only in the vineforests of Iron Range-McIlwraith Range on Cape York Peninsula. It was collected during revisionary work on small carnivorous marsupials and was described in 1980.

The Platypus Frog, *Rheobatrachus silus*, created a sensation in the scientific world. The female carries her young in her stomach. The young have a secretion that protects them from their mother's digestive juices.